

Two new *Rissoina* (s.s.) sister species from the Western Pacific

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Two new species of *Rissoina* (*Rissoina*) from the tropical western Pacific are named and their shells described. Both species seem to be closely related to each other differing mainly in protoconch characters and in larval development. No other similar species are recorded so far.

Key words: *Rissoina*, Rissoiinae

Introduction

In the course of a more detailed revision of the subfamily Rissoiinae (family Rissoidae), currently in progress, two very similar Pacific species were recorded. Both show considerable similarities in teleoconch characters, but differ in protoconch features. It is suggested here that they represent a species pair. Determining species pairs, however, is difficult if: (1) several species of a particular group are very similar (as in the case of groups with little inter-specific variation) or (2) if sister species evolve rapidly and differ in several features. Identification of sister species relationships should be based essentially on synapomorphies (Panchen, 1992).

Rissoiinae species do not differ markedly from each other in anatomical features, other than penial morphology, and therefore species identification is usually based on shell characters only (Ponder 1985; Sleurs, 1993). However, the latter seem to be strongly subject to parallelism, which makes identification of the apomorphic conditions extremely difficult. Nevertheless, if a particular complex sculpture pattern is observed in only two species of the same supraspecific taxon, then, in the absence of other conflicting data, this can be used as justification for relationship.

Abbreviations

AMS: Australian Museum, Sydney; KBIN: Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels; LACM: Los Angeles County Museum of Natural History, Los Angeles; NNML: Nationaal Natuurhistorisch Museum, Leiden

Systematics

Family Rissoidae Gray, 1840

Subfamily Rissoiinae Stimpson, 1865

Genus *Rissoina* d'Orbigny 1840

Subgenus *Rissoina*

Rissoina (*Rissoina*) *vangoethemorum* sp. nov.

(Figs. 1 A-D; 3)

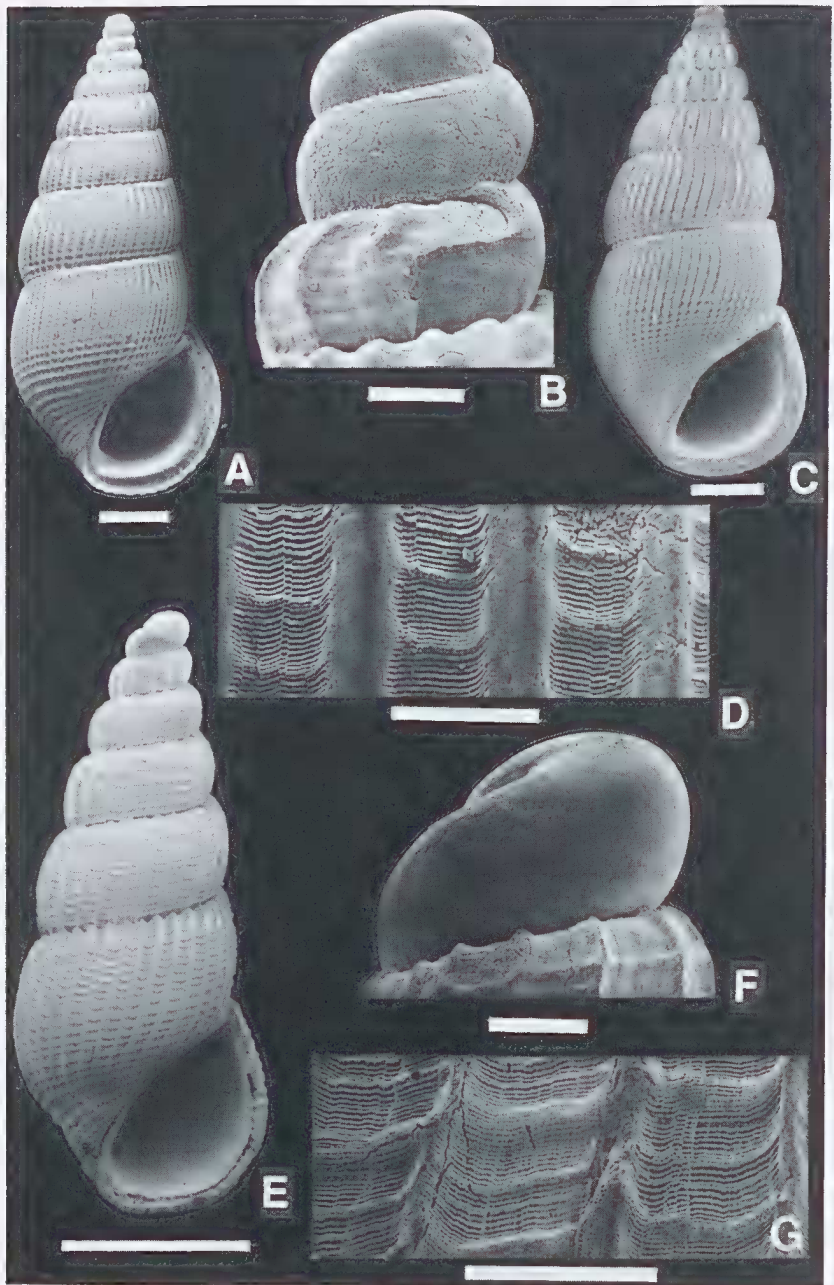


Figure 1. A–D. *Rissoina (Rissoina) vangoethemorum* sp. nov. A–B, D. Holotype of *Rissoina (Rissoina) vangoethemorum* sp. nov., Reamuna Islet, Madang Province, Papua New Guinea (KBIN). A. Shell (scanning electron micrograph). C. Lifou, New Caledonia (Coll. Dautzenberg, KBIN). E–G. *Rissoina (Rissoina) soror* sp. nov. 1 km N.N.W. of Oku, Okinawa, Japan (LACM, 77–61). E. Shell (scanning electron micrograph). F. Protonconch (scanning electron micrograph). G. Microsculpture of teleoconch (scanning electron micrograph). (Scale bars: E: 1 mm; A, C: 0.5 mm; B, D, F–G: 0.1 mm).

Type material: Holotype (Fig. 1 A–B, D): empty shell from Reamuna Islet (04°17'S, 144°59'E), Madang Province, Papua New Guinea, reef flat at very low tide, at the underside of coral boulders, coll. J. Van Goethem, L. Vanderborcht, B. & R. Van Goethem, 03.VI.1981 (stn. PNG 81–251) (KBIN, 463). Paratypes: one empty shell from the type locality (PNG 81–251) (KBIN), one empty shell from Reamuna Islet (Madang Prov.), Papua New Guinea, reef flat at very low tide, at the underside of coral boulders in the intertidal zone, 31.VII.1981, coll. M. Magap (PNG 81–543) (KBIN); one empty shell from off Murray I. (09°56'S, 144°04'E), Torres Strait, Queensland, 30.VIII–03.X.1907, coll. C. Hedley (AMS, C.154018).

Description: Shell (Fig. 1 A, C): small (length up to 4.7mm), elongately conical, rather thin. Protoconch (Fig. 1 B): elongate, subcylindrical, of planktotrophic larval type, of 1 3/4, moderately convex whorls, with deeply impressed suture; surface smooth, apart from one weak subsutural spiral thread on last whorl; transition to teleoconch abrupt with deep and narrow adapical sinusigeral notch, latter with weakly thickened margin. Teleoconch: of about 6–7, weakly convex to almost flat-sided whorls; adapical spire whorls moderately depressed (much wider than high); sutures deeply impressed to narrowly channeled; sculpture of prominent, rounded, distantly to densely spaced, almost orthocone to weakly opisthocline axial ribs, the latter more densely spaced, more numerous and less prominent on abapical whorls; axial ribs of last whorl very weak to almost absent on abapical half of last whorl; interspaces on 3–4 adapical whorls moderately wide, moderately deep and gradually narrower and shallower on subsequent whorls; early spire whorls with moderately prominent, distantly spaced, rounded spiral riblets, overriding the axial ribs; spiral sculpture gradually weaker, more densely spaced and more numerous on subsequent spire whorls; spiral sculpture more prominent on abapical half of last whorl, forming very weak, rounded nodules where intersecting abapical part of axial ribs. Microsculpture (Fig. 1 D) of very fine, densely spaced, spiral threads between spiral riblets. Aperture: lenticular; inner lip weakly angulate centrally, thin and narrow; anterior channel absent; outer lip thin, moderately opisthocline, with a very narrow, weakly thickened and rounded, external

Table 1. *Rissoina (Rissoina) vangoethemorum* sp. nov. Shell dimensions (L: total shell length; Ls: spire length; D: shell diameter; no. whorls: number of teleoconch whorls).

	L (mm)	Ls (mm)	D (mm)	no. whorls
Holotype: Reamuna Islet, Papua New Guinea (KBIN) Fig. 1 A–B, D	4.24	2.74	1.72	7
Paratypes: Reamuna Islet, Papua New Guinea (KBIN)	4.08	2.58	1.69	6 1/2
	3.76	2.30	1.63	6
Paratype: Murray I., Queensland, Australia (AMS, C.154018)	4.66	3.00	1.98	6 3/4
Indonesia, Ambon (NNML)				
Stn 44	4.03	2.53	1.72	6 1/2
Stn 30	3.38	2.19	1.44	5 3/4

varix, the latter bearing several, densely spaced axial and spiral riblets, giving outer lip a slightly crenulated appearance. Colour: white throughout. Operculum, radula and internal anatomy: unknown.

Shell dimensions: See table 1.

Additional material examined: INDONESIA: Ambon: Hitu, Suli, 6m, Rumphius Biohistorical Expedition, 1 spec. (NNML); Leitimur, Latuhalat, Rumphius Biohistorical Expedition, 1 spec. (NNML). AUSTRALIA: Queensland: Heron I., Capricorn Group, 6m, 1 spec. (AMS, C.153983); Michaelmas Cay (16°36'S, 145°59'E), G.B.R. Boring expedition, 2 spec. (AMS, C.153994). NEW CALEDONIA: Lifou, 1 spec. (KBIN, Dautzenberg Collection)

Geographical distribution: Tropical western Pacific from Ambon (Indonesia), N.E. Australia, E. Papua New Guinea and New Caledonia (Fig. 3).

Variation: *Rissoina (Rissoina) vangoethemorum* sp. nov. shows some variation with respect to the relative diameter of the shell and the axial ribs on the adapical spire whorls being more or less prominent and more or less distantly spaced; otherwise, this new species appears to be rather uniform with respect to the other shell characters.

Affinities and differences: *Rissoina (Rissoina) vangoethemorum* sp. nov. is very similar in shell shape and teleoconch sculpture to *Rissoina (Rissoina) soror* sp. nov., described below, and is contrasted where the latter is introduced.

The sculpture of *R. (R.) vangoethemorum* is superficially similar to *R. (Ailinzebina)* sp. A (Sleurs, 1993), but differs in being less regular, especially on the last whorl and in the axial riblets being less closely spaced; furthermore the simple peristome and the lack of the spiral fold on the abapical third of the last whorl easily distinguishes *R. (R.) vangoethemorum* from *R. (A.)* sp. A.

R. (R.) vangoethemorum shows also some superficial resemblance to the western Atlantic *R. (Ailinzebina) elegantissima* d'Orbigny, 1842, but differs essentially in having more crowded and weaker axial ribs and in having a simple peristome.

The subcylindrical form of the protoconch and the distinctive sculpture of the teleoconch readily distinguish *Rissoina (Rissoina) vangoethemorum* from its congeners.

Etymology: This new species is named for Dr. and Mrs. Jackie and Lutgarde Van Gothem-Vanderborgh and their children Bart and Ruth, who collected this species at Reamuna Islet, Papua New Guinea.

Rissoina (Rissoina) soror sp. nov.

(Figs. 1 E–G; 2 A–C; 3)

Type material: Holotype (Fig. 2 A): empty shell, Souvi Bay, S.W. coast of Viti Levu, Fiji (18°11'S, 177°36'E), coll. J. Laseron, 1962 (AMS, C.153947). Paratypes: 15 shells from type locality, coll. J. Laseron, 1962 (AMS, C.153947).

Description: Shell (Figs. 1 E, 2 A): small (length up to 4.7 mm), thin, elongately conical. Protoconch (Figs. 1 F, 2 B): of non-planktotrophic larval type; of 1 glossy whorl, strongly tilted with respect to axis of teleoconch; transition to teleoconch abrupt, with a straight, non thickened margin. Teleoconch: of about 7, low, moderately to strongly convex whorls, with deeply impressed to narrowly channeled sutures. Axial

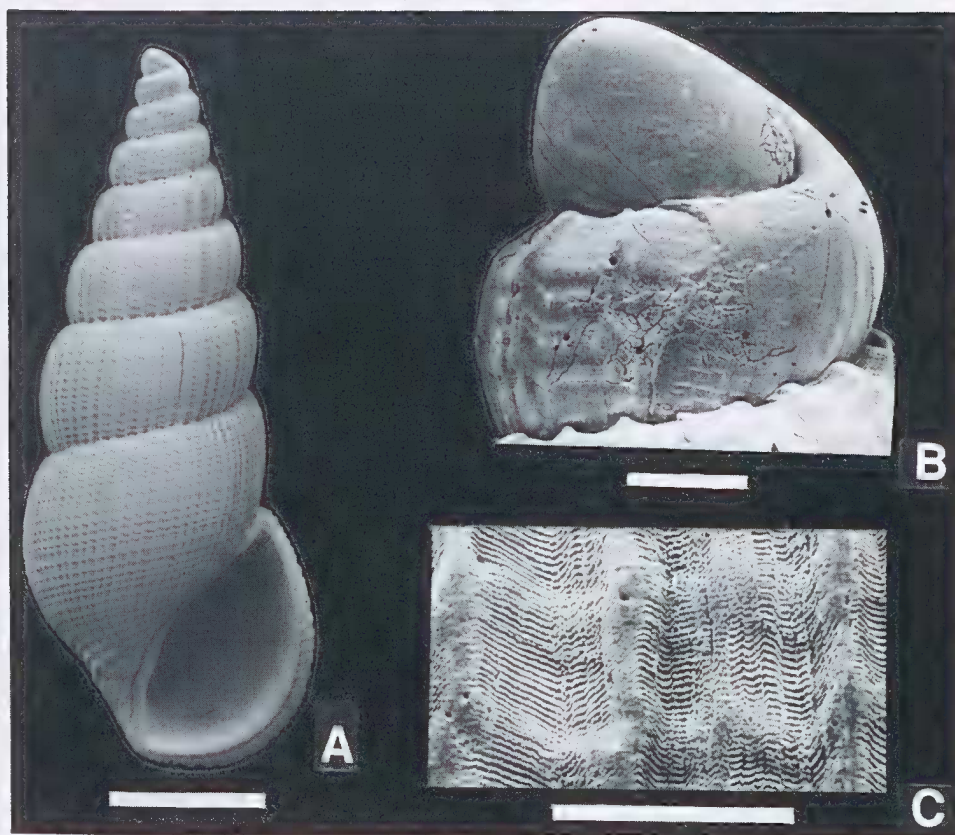


Figure 2. A–C. *Rissoina (Rissoina) soror* sp. nov. A. Holotype of *Rissoina (Rissoina) soror* sp. nov., Souvi Bay, S.W. coast of Viti Levu, Fiji, shell (scanning electron micrograph) (AMS, C.153947). B–C. Paratype of *Rissoina (Rissoina) soror*, Souvi Bay, S.W. coast of Viti Levu, Fiji (AMS, C.153947). B. Protonconch (scanning electron micrograph). C. Microsculpture of penultimate whorl of teleoconch (scanning electron micrograph). (Scale bars: A: 1 mm; B–C: 0.1 mm).

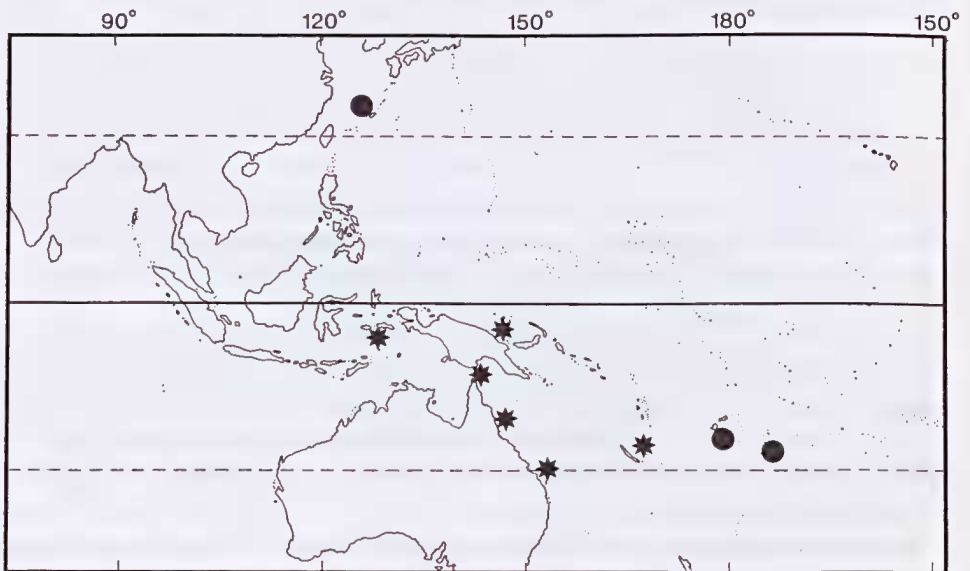
sculpture of prominent, narrow, distantly spaced, rounded axial ribs on adapical spire whorls, but axial ribs gradually less prominent, more numerous and more crowded on abapical spire whorls and on last whorl. Spiral sculpture of very weak, more or less distantly spaced, spiral threads, forming very weak granules where intersecting axial ribs (Figs. 1 G, 2 C); spiral threads slightly more prominent on abapical half of last whorl. Aperture: lenticular; columellar side weakly angulate centrally; anterior and posterior channel almost absent; inner lip thin; outer lip thin, weakly crenulate, with a rather prominent, narrow and rounded external varix; outer lip weakly opisthoclinal in profile. Colour: white throughout. Operculum, radula and internal anatomy: unknown.

Shell dimensions: See table 2.

Variation: Apart from the variable number of axial ribs on the whorls of the teleoconch, there appears to be very little variation amongst the series of specimens examined.

Table 2. *Rissoina (Rissoina) soror* sp. nov. Shell dimensions (L: total shell length; Ls: spire length; D: shell diameter; no. whorls: number of teleoconch whorls).

	L (mm)	Ls (mm)	D (mm)	no. whorls
Holotype: Viti Levu, Fiji (AMS, C.153947)				
Fig. 2 A	4.6	3.0	1.8	6 3/4
Paratypes: Viti Levu, Fiji (AMS, C.153947)				
	4.7	3.0	2.0	6 1/2
	4.3	2.7	1.8	6
	4.1	2.7	1.6	6 3/4
	4.0	2.6	1.6	6 1/2
	4.0	2.5	1.7	6
Fig. 2 B-C	3.8	2.4	1.6	6
	3.6	2.3	1.5	6
Fiji (LACM, 79-40)				
	4.3	2.8	1.7	6 1/2
Fiji (LACM, 79-42)				
	3.8	2.5	1.5	6
Tonga (AMS, C.153900)				
	3.5	2.3	1.4	6
	3.0	1.8	1.3	5
Okinawa (LACM, 77-61)				
Fig. 1 E-G	3.7	2.5	1.4	6
	3.3	2.1	1.3	5 1/2

Figure 3. Geographical distribution of *Rissoina (Rissoina) soror* sp. nov. (●) and *R. (R.) vangoethemorum* sp. nov. (*).

Additional material examined: JAPAN: Okinawa: Tengen (Kogosuku), 2–5 km NNW of Gushikawa, 5–11 m, stn. 77–102 (LACM), 1 spec. (AMS, C.153857); 2.8 km S.S.W. of Kadena, 1 spec. (LACM, 77–55); 1 km N.N.W. of Oku, 7 spec. (LACM, 77–61). FIJI: ca. 1 km S. of Suva Point, Viti Levu, 1 spec. (LACM, 79–40); Korolevu, Viti Levu, 1 spec. (LACM, 79–42). TONGA: Ha'apai, beach grit, 2 spec. (AMS, C.153900).

Geographical distribution: Tropical western Pacific from Okinawa to Tonga (Fig. 3).

Affinities and differences: *Rissoina (Rissoina) soror* sp. nov. strongly resembles *Rissoina (Rissoina) vangoethemorum* sp. nov. in shell shape and sculpture, but differs essentially in having a protoconch of non-planktotrophic larval type, instead of a planktotrophic protoconch in *Rissoina (Rissoina) vangoethemorum*.

Rissoina soror superficially resembles the western Atlantic species *R. (R.) krebsii* Mörch, 1876 in teleoconch sculpture, but differs essentially in having a tilted protoconch and in the shell being less robust and more elongate.

Remarks: Despite the very disjunct distribution, no distinction can be made between specimens from Fiji, Tonga and Okinawa on the basis of shell characters only. Therefore it is not known whether the disjunct distribution is the result of poor collecting in the intervening areas, if the species was previously more widely distributed in the Western Pacific and has subsequently contracted, or if two non-planktotrophic species are represented, *i.e.* two separate speciation events took place from the planktotrophic ancestor, but without obvious subsequent evolution in teleoconch characters. The examination of additional material, with preserved soft parts, may give us a better insight in this problem.

Etymology: *Soror* (L.=sister) refers to the possibility that this species may represent a sister species of *Rissoina (Rissoina) vangoethemorum* sp. nov.

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